BIENNIAL REPORT TO CONGRESS

on

Coastal Zone Management
2002-2003

Prepared by:

The National Oceanic and Atmospheric Administration
United States Department of Commerce

Message from the Director

Managing the use of our precious, sensitive coastal resources is of paramount importance to this nation's future—a fact well understood over 30 years ago during the creation of the Coastal Zone Management Act.

Over the years, the progress envisioned by the Act has been steady. Today there is a strong partnership between NOAA and state governments. We are working together to ensure economic growth that is well balanced with the protection of our coastal environments. But the job is never over.

Our coastal zone management community continued to grow in 2002-2003. In response to an executive order, we created The National Marine Protected Areas Center. In the fall of 2002, Indiana became the 34th state or territory with a Coastal Management Program and, on the west coast, we welcomed the San Francisco Bay National Estuarine Research Reserve into the reserve system. There are now 26 sites in the reserve system, and I am looking forward to the continued expansion of this important program so that all biogeographic regions are represented as called for by statute.

During the last two years the Office of Coastal Resource Management (OCRM) has worked diligently with states and territories to develop a system to measure the effectiveness of state coastal management programs and research reserves. I am pleased to report that pilot phases of this measurement system will now begin in 2004.

We stand ready to continue to link up our partners with the relevant and valuable services available from virtually every branch of NOAA—from the latest in observation and monitoring technology to innovative educational and training opportunities. OCRM is well positioned to face future challenges in its role as a partner with states and local communities in coastal resource stewardship.

This biennial report is particularly timely in light of the forthcoming recommendations from the U.S. Commission on Ocean Policy. The effective management of this country's 95,000-plus miles of coastline, and how we—the states, territories, and federal government—work in unison to ensure these critical resources flourish, will continue to be a challenge. OCRM is ready—and able—to meet this challenge as it has for nearly 30 years.

Eldon Hout
Director

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National Strategy for Coastal and Ocean Management: An Overview

The United States as a Coastal Nation

The United States is a coastal nation – both in terms of population and economic activity. While coastal counties house nearly 53 percent of the country's population, they account for just 13 percent of the continental U.S. land area[1].

The U.S. coastal zone is home to a variety of valuable economic activities, including: commercial and sport fishing, tourism and recreation, and the extraction of minerals, such as oil and gas. In addition, the ocean is valued for such uses as: marine transportation, research, and military operations. Yet continued population growth and development place pressure on these valuable resources.

In 1972, Congress recognized the importance of meeting the challenge of continued growth in the coastal zone and responded to the threats to the nation's coasts and oceans by passing the Coastal Zone Management Act (CZMA). This Act, administered by the National Oceanic and Atmospheric Administration (NOAA), provides for management of the nation's coastal resources, including the Great Lakes, by balancing economic development with environmental conservation. Careful management of these resources is necessary to ensure that people are able to enjoy clean water and a healthy ecosystem that supports a vibrant coastal economy.

Key Features of the Coastal Zone Management Act

The CZMA created the National Coastal Zone Management Program and the National Estuarine Research Reserve System. Through the CZMA, Congress crafted a unique framework for coastal and ocean management with five essential features. The Act is: implemented by states or territories, voluntary (while providing federal consistency authority), balanced in its objectives, area-based, and performance-based.

State or Territory Implementation
States and territories design programs that best fit their individual organizational structure, laws, and coastal environment. The federal government helps states and territories in program oversight and works to unify a national vision for coastal and ocean management.

Voluntary
States and territories have several incentives to participate. The two primary incentives for participating are financial assistance for program administration and federal consistency authority. Through the CZMA, federal dollars are matched by state dollars to implement state/territorial coastal management programs and research reserves. The CZMA's federal consistency provision gives coastal states and territories an important voice in the future of their coastal areas by ensuring that land and water uses are compatible with each state's laws and policies.

Balanced Objectives
With its call to "preserve, protect, develop, and, where possible, to restore or enhance the resources of the nation's coastal zone," the program was one of the first to embrace the notion that it is possible, and essential, to balance coastal development with maintaining environmental quality.

Area-Based
Many other coastal and ocean programs manage resources of the coastal zone for a single purpose (such as fisheries management or oil and gas development). In contrast, the CZMA aims to manage the entire coastal area, including both land and water onshore as well as offshore, and involving ocean uses such as fisheries, recreation, marine transportation, and others. National estuarine research reserves are protected areas that are owned and managed by state agencies or universities.

Performance-Based
Program evaluation is built into the CZMA. The Act calls for periodic reviews of coastal management programs and national estuarine research reserves to determine if states and territories are implementing and enforcing approved programs and addressing national goals.

The State/Federal Partnership

Programs Created by the Coastal Zone Management Act

The CZMA created an enduring partnership between the federal government and coastal states and territories to manage the coastal zone, establishing the world's first coastal management program.

The National Coastal Management Program
The National Coastal Management Program encourages coastal states, territories, and the federal government to work together. It is the only program of its kind to address coastal issues in a comprehensive, integrated way. By leveraging federal and state matching funds, this program gives states flexibility to design a program that accommodates their unique coastal challenges and legal framework. Thirty-four of the 35 eligible coastal and Great Lakes states and territories (29 coastal states and five island territories — all except Illinois) have developed approved coastal management programs. These programs protect more than 99 percent of the nation's 95,331 miles of ocean and Great Lakes coastline.

Together, the 34 coastal programs represent federalism at its best: diverse state and territory programs responding to their specific needs, tied together in one national framework committed to coastal zone management that meets both development and conservation objectives.

The National Estuarine Research Reserve System
The National Estuarine Research Reserve System helps fulfill the Act's stewardship mission to sustain healthy coasts by improving the nation's understanding and stewardship of estuaries. Estuaries are areas where freshwater from rivers mixes with seawater. They represent important coastal habitats that are used as spawning grounds and nurseries for at least two-thirds of the nation's commercial fish and shellfish. The wetlands associated with estuaries buffer uplands from flooding. Estuaries also provide many recreational opportunities, such as swimming, boating, and bird watching.

Each estuarine research reserve is a living laboratory in which scientists conduct research and educators communicate research results. Reserve staff members work with local communities and regional groups to address natural resource management issues. Through integrated research and education, the reserves help communities develop strategies to deal successfully with coastal resource issues. The national system now includes 26 reserves in 17 of the 29 biogeographic sub-regions in 21 coastal states and territories.

NOAA's Office of Ocean and Coastal Resource Management
NOAA provides leadership in crafting a national vision for ocean and coastal resource management. NOAA's Office of Ocean and Coastal Resource Management (OCRM) coordinates this leadership, guidance, and support by:

- Administering financial support for coastal management programs and estuarine reserves;
- Coordinating and evaluating coastal management programs and estuarine reserves and providing assistance for program improvement;
- Providing management assistance, such as mediating multiple use conflicts, helping to interpret statutory and regulatory requirements, assessing and approving changes to state programs, coordinating with the rest of NOAA and other federal agencies to meet state information and technical needs; and
- Cooperating with the states and territories, other federal agencies, and citizens to develop and implement regional approaches to coastal and ocean governance.

NOAA Resources Supporting States and Territories
NOAA established the Coastal Services Center in 1994 to serve those state coastal management programs created by the Coastal Zone Management Act. The Center works with state and local organizations to address specific issues, such as flooding, dock permitting, erosion control, and competing development demands. The Center brings new sources of expertise, information, and technology to these state partnerships.

The Center's primary areas of expertise lie in Geographic Information Systems (GIS), remote sensing, and training and information for coastal resource managers. Efforts include remote sensing to detect and document land-cover changes and trends, courses that teach new technical and nontechnical skills to state employees, and decision-support tools that focus on issues that

range from hazard mitigation to habitat restoration. The lessons learned and the technologies developed from each project are shared with states and communities in similar circumstances.

The National Marine Protected Areas (MPA) Center, a partnership between the Department of Commerce and the Department of the Interior, supports the Coastal Zone Management Act through the marine managed areas inventory, which will be a complete database of state, territory, and commonwealth protected areas for resource management and analysis purposes. The MPA Center also provides staff support to coastal programs through interns who help in the data collection for the marine managed areas inventory.

The Cooperative Institute for Coastal and Estuarine Environmental Technology (CICEET) is a partnership between NOAA and the University of New Hampshire to develop innovative technologies for monitoring, managing and preventing contamination and degradation in estuaries and coastal waters. CICEET serves the coastal zone management programs by developing techniques to remediate toxic contaminates, microbial contaminates, nutrient enrichment and habitat loss.

Funding
Expenditures for CZMA programs in FY 2002 and 2003 are noted in Appendix A.

New Developments in 2002-2003

The coastal zone management community continued to grow and evolve in 2002—2003. New programs were added to both the Coastal Zone Management Program and the National Estuarine Research Reserve System. OCRM also made progress toward measuring effectiveness from a nationwide perspective.

Approval of Indiana's Coastal Management Program
In September 2002, state and federal representatives commemorated Indiana's approval as the 34th coastal management program. The Department of Natural Resources, Division of Soil Conservation is the lead agency for the newly approved program. Goals include: protection and restoration of significant natural resources, prevention of loss of life an property in coastal hazard areas, improved public access to Lake Michigan, improved government coordination and policy and decision making, and revitalization of urban waterfronts and ports.
Approval of the San Francisco Bay National Estuarine Research Reserve

In August 2003, NOAA formally designated the San Francisco Bay National Estuarine Research Reserve. The reserve is a partnership among NOAA, San Francisco State University's Romberg Tiburon Center, California State Parks, the Solano Land Trust, and the Bay Conservation and Development Commission. The reserve covers over 3,700 acres in two sites: China Camp State Park (1,640 acres), in Marin County, and the Rush Ranch Open Space Preserve (2,070 acres), in Solano County.

The federal designation completed a process that began with a 1989 application to join the program. The focal point for research, education, and stewardship in the San Francisco Bay Reserve is tidal marsh restoration.

The Proposed Texas National Estuarine Research Reserve
The University of Texas Marine Science Institute initiated site selection for a proposed Texas Reserve in 2002. The Marine Science Institute convened committees to select and evaluate potential sites. The committees recommended the Mission-Aransas Estuary as the location, and there was strong public support for the proposed site. The site nomination package will be submitted to the Governor in 2004 for his approval and submission to NOAA. The proposed reserve will add a new biogeographic sub-region to the National Estuarine Research Reserve System.

Progress on Marine Protected Areas Executive Order 13158
The Marine Protected Areas (MPA) Federal Advisory Committee was formed during 2003 and held its first meeting in Washington, D.C. in June 2003. The Committee's responsibilities include providing recommendations to the Secretaries of the Departments of Commerce and the Interior on implementing Section 4 of the MPA Executive Order. The National MPA Center supports the Committee, working in cooperation with the Department of the Interior.

Measuring Effectiveness
While the coastal states and territories and NOAA have been working to achieve the goals of the CZMA, quantifying those successes at the state and national level presents a challenge. The challenge stems from the complexity of coastal management issues, the physical and ecological diversity of the coasts, and the difficulty of measuring the value of good management in preventing harmful environmental impacts. The challenge is heightened because a baseline measurement of the nation's coasts was not established at the program's outset in 1972. Without baseline data to compare, it is difficult to measure the direct benefits of improvements made by coastal management programs and reserves. OCRM is working on several fronts to develop and implement a national system to measure the effectiveness of the National Coastal Management Program and the National Estuarine Research Reserve System. Through partnerships with the coastal states and territories and the H. John Heinz III Center for Science, Economics and the Environment, OCRM is developing the National Coastal Management Performance Measurement System. OCRM has conducted assessments of the current use of performance measures by all coastal management programs and reserves. Using the information collected, OCRM worked with coastal management programs and reserves to identify and develop a suite of environmental and programmatic indicators.

Under the National Coastal Management Performance Measurement System, coastal management programs and reserves may collect and report on different, but complementary, sets of indicators due to their different goals and responsibilities. Thus, indicator data from the National Coastal Management Program and the National Estuarine Research Reserve System

will complement each other and results may be aggregated across programs and reserves to assess the national impact.

In FY 2004, OCRM will begin preliminary implementation of the National Performance Measurement System through pilot projects for coastal management programs and a subset of measures for all reserves.

Coastal State Program Enhancement

CZMA Section 309, the Coastal Zone Enhancement Grant Program, provides funding to states and territories to improve coastal programs in any of nine areas of national significance. Funding does not need to be matched with state funds.

As a part of the Section 309 grant process, all coastal management programs assess the nine enhancement areas in their state. Coastal management programs develop multi-year strategies to address issues they identify as high priorities. The strategies outline activities and funding levels that will lead the state or territory to specifically defined program changes.

During 2002—2003, state and territory coastal programs made significant progress in implementing Section 309 strategies that were developed for the FY 2001—2005 funding period Information provided in the states' FY 2001 assessments identified national trends in coastal priorities, science and management needs, and policy and decisionmaking implications (see box). OCRM used this information to frame the agenda of a joint federal-state coastal zone management strategic planning workshop held in November 2002.

Ranking of Coastal Enhancement Program Areas in Section 309 Assessments

1. *Control of cumulative and secondary impacts from development*
2. *Wetland protection and restoration*
3. *Protection from coastal hazards*
4. *Management of ocean resources*
5. *Public access to coastal areas*
6. *Special area management planning*
7. *Reduction of marine debris (tie)*
7. *Facilitating the siting and permitting of aquaculture facilities (tie)*
9. *Siting of federal and energy facilities*

Evaluations of Coastal Zone Management and National Estuarine Research Reserve Programs

The CZMA calls for periodic performance reviews of all state and territorial coastal management programs and estuarine research reserves. The reviews assess whether the state lead agency is implementing and enforcing the essential elements of the approved program; playing a leadership role in coastal issues; monitoring the actions of state agencies and local governments; basing decisions on enforceable policies of the program; assuring the opportunity for full public

participation; addressing national coastal zone management needs; and adhering to the terms and conditions of any financial assistance awards.

The evaluation process consists of four distinct components: (1) preliminary review of relevant program documents, grants, work products, and correspondence; (2) a site visit to the state or territory during which an evaluation team interviews program staff, other federal and state agency staff, and various public and private interest groups; (3) a public meeting; and (4) follow-up contacts with selected parties.

Historically, OCRM has evaluated coastal management programs and reserves separately. For efficiency and to look at issues common to both programs, OCRM is moving toward joint evaluations of coastal management programs and reserves in a state when a joint evaluation is appropriate. In the last two years, OCRM has conducted joint evaluations in Delaware and Massachusetts.

During FY 2002—2003, OCRM completed performance evaluations (including issuance of final findings) of the following programs:

Coastal Management Program Evaluations
- California
- Delaware
- Georgia
- Hawaii
- Louisiana
- Michigan
- Mississippi
- Pennsylvania
- Puerto Rico
- Rhode Island
- South Carolina
- Washington

National Estuarine Research Reserve Evaluations
- ACE Basin (South Carolina) Reserve
- Delaware Reserve
- Great Bay (New Hampshire) Reserve
- Jobos Bay (Puerto Rico) Reserve
- Rookery Bay (Florida) Reserve

OCRM also conducted evaluation site visits for the following coastal programs — Alaska, Connecticut, Guam, Massachusetts, New Hampshire, North Carolina, Oregon, Rhode Island, U.S. Virgin Islands, and Virginia coastal management programs; and national estuarine research reserves—Chesapeake Bay (Maryland), Chesapeake Bay (Virginia), Jacques Cousteau (New

Jersey), Kachemak Bay (Alaska), Old Woman Creek (Ohio), Waquoit (Massachusetts). Evaluation findings will be published following the end of this biennium.

Common themes:
The evaluations conducted in the last biennium show accomplishments among diverse coastal management programs. For example, most programs coordinate well with federal, state, and local government officials and private organizations to obtain multi-disciplinary solutions to complex issues. In Oregon, the Coastal Program's natural hazards policy working group advanced recommendations that resulted from an earlier analysis of existing policy at the state and local level. Accomplishments include: GIS development, a report on shore-front protection structures, a landslide module for the Oregon Coastal Atlas, technical reports, and updated local planning requirements with amendments specific to natural hazards.

Many programs have developed solutions and coordinated responses to issues and have also influenced the development of initiatives and scientific research to meet the goals and objectives of the CZMA. The Virginia Coastal Policy team includes the Chesapeake Bay (Virginia) Reserve and the Virginia Coastal Management Program and provides a forum for management issues such as coordinated shoreline management. The reserve also helped the Virginia Office of Surface and Water Quality develop standards for regional water quality monitoring systems. Finally, many programs are increasing the use of high quality geographic information technologies and applications in their management efforts. They are also forming partnerships to collect data, conduct training, and identify uses of GIS data. For example, the Delaware Coastal Management Program entered into an agreement with state resource management agency partners to use GIS to determine the scope of proposed projects and whether a comprehensive review was needed.

In addition to identifying a common set of accomplishments, the evaluations also revealed common challenges facing state programs. For example, states are facing challenges in committing funding to program implementation because of budgetary constraints. As a result, staff positions remain vacant and participation on initiatives is affected. Several programs are subject to state policies that restrict travel to national meetings, despite the provision of federal funds for these purposes.

Changes in state leadership resulted in the reorganization of several programs. Recommendations were made by NOAA to organize the programs most effectively within the state government structure and ensure resources are available for program support.

Evaluations also identified challenges with performance reports, financial reports, and grants management. Recommendations called for states to modify their grant cycles to coincide with NOAA fiscal years. Evaluations also recommended states give priority to program requirements including management plan revisions, submission of program changes, and program document updates.

National Coastal Resource Managers' Survey Results

Every three years, NOAA's Coastal Services Center conducts a customer survey of state and local coastal management programs. The survey offers a snapshot of the needs and capabilities of this community. In 2002, more than 400 individuals completed the survey with an overall response rate of 74 percent.

The following represents some of the survey results.[2]

- Respondents expressed a need to increase their knowledge in the fields of social sciences, technology, and management skills.
- Tight budgets make travel an important issue, so coastal managers preferred to have the training programs delivered to them instead of the other way around.
- Spatial data are used to address many high priority issues, including habitat restoration and monitoring, land use planning, watershed planning, water quality monitoring, and nonpoint source pollution.
- A variety of technology-based tools, including geographic information systems (GIS) and the Internet are becoming nearly commonplace for the coastal resource management community.

Developments in Federal Consistency

Federal Consistency History

The CZMA strikes a balance between the need to conserve coastal resources and the need to provide for development, recreation, and other priority uses of the coastal zone. The Act gives states the primary authority to determine how best to achieve this balance, but requires them to give priority consideration to coastal dependent activities that are of national interest, e.g., siting of energy facilities, national defense, ports.

Under the CZMA, a state's primary ability to review federal actions is through section 307, commonly known as the federal consistency provision. Federal consistency requires that Federal agency activities be consistent to the maximum extent practicable with the enforceable policies of state coastal management programs approved by NOAA. Activities by non-federal applicants for federal authorizations and funding must be fully consistent with the enforceable policies of coastal management programs.

Because actions by the federal government can impact the coastal zone, the federal consistency authority is the primary incentive for many states to participate in the coastal management program. While there is often negotiation between Federal agencies and non-federal applicants under this authority, states concur with approximately 93 to 95 percent of all federal actions reviewed.

OCRM has updated its federal consistency website to now include a wide range of federal consistency information, including the "Federal Consistency Workbook" and "Federal Consistency News," which replace the previous hard-copy Federal Consistency Bulletins.[3]

Recent Developments in Federal Consistency – Energy
In February 2001, Vice President Cheney established the National Energy Policy Development Group to bring together business, government, local communities, and citizens to promote a dependable, affordable, and environmentally sound national energy policy. The Energy Report was sent to President Bush on May 16, 2001.

The Energy Report contains numerous recommendations to meet these goals. The Energy Report found the effectiveness of CZMA programs is "sometimes lost through a lack of clearly defined requirements and information needs from federal and state entities, as well as uncertain deadlines during the process." To address these issues, the Energy Report recommended that the Department of Commerce "determine if changes are needed regarding energy-related activities and the siting of energy facilities in the coastal zone."[4]

To address these recommendations, in July 2002, NOAA published an Advanced Notice of Proposed Rulemaking (ANPR) seeking comments on whether improvements should be made to NOAA's federal consistency regulations. In June 2003, NOAA published a proposed rule responding to the recommendations contained in the Energy Report and comments received on the ANPR.[5] NOAA received 3,066 comments from the House of Representatives, the Senate, states, industry, environmental groups, Federal agencies, and the public. Most strongly opposed any changes to NOAA's rules. The proposed rule, related public documents, and comments are available online.[6]

Progress in Addressing the Major Goals of the Coastal Zone Management Act

In May 2003, the H. John Heinz III Center for Science, Economics, and the Environment concluded an 18-month study, Developing a Framework for Identifying Performance Indicators. The study, commissioned by NOAA, identifies six shared national and state coastal resource goals, based on the objectives of the CZMA. This section describes NOAA's accomplishments over the last two years in each of the six goals chosen by the Heinz Center: Coastal Habitats, Coastal Water Quality, Public Access, Coastal Hazards, Coastal Community Development, and Coastal-Dependent Uses.

Coastal Habitats

Section 302 (d) of the CZMA finds, "the habitat areas of the coastal zone, and the fish, shellfish, other living marine resources, and wildlife therein, are ecologically fragile and consequently extremely vulnerable to destruction by man's alterations." These vulnerable resources are also extremely valuable. Coastal and estuarine habitats provide a home for threatened species

ranging from salmon to sea turtles to manatees. Commercial fisheries alone provide $3.6 billion to the U.S. economy each year.[7] And healthy coastal habitats also provide ecosystem services that are important for people, including filtering runoff and providing recreational opportunities. To protect these precious resources, NOAA's National Ocean Service administers several programs designed to protect habitats ranging from dunes in the Great Lakes to coral reefs in Guam.

Coastal and Estuarine Land Conservation Program

The Coastal and Estuarine Land Conservation Program (CELCP) was established by the Appropriations Act of 2002 (P.L. 107-77) to help protect estuaries and coastal lands. The program provides coastal states with funding for projects that ensure conservation of these areas for the benefit of future generations.[8] NOAA completed guidance for the program as required in the Appropriations Act of 2002. The guidelines describe the criteria for grant awards and establish the process for competitive funding when funds become available for that purpose.

Coastal states with a federally approved coastal management program or estuarine research reserves are eligible to participate in the program. A state is eligible to submit projects for competitive funding at the national level once it has developed and received approval of a Coastal and Estuarine Land Conservation Plan. The state must be able to match CELCP funds, one-to-one, from other funding sources.

CELCP funds are intended to complement current federal, state, and local coastal and estuarine conservation plans. To be considered, the project must:

- Protect coastal or estuarine areas that have significant conservation, recreation, ecological, historical, or aesthetic values, or that are threatened by conversion from their natural or recreational state to other uses;
- Give priority to lands that can be effectively managed and protected; and
- Advance the goals, objectives or implementation of federal, regional, state or local coastal management plans.

In FY 2002—2003, $51 million was appropriated for 40 Congressionally-directed projects in coastal and estuarine areas. In one project, the Mississippi Secretary of State received CELCP funding to help support the acquisition of Deer Island. The undeveloped island, located off Biloxi in the Mississippi Sound, had been targeted by developers for conversion to casinos. Instead, it became a part of the state's Coastal Preserve System, ensuring the permanent protection of 500 acres of tidal marsh, forested upland, and sand beaches. Deer Island will be maintained primarily as wildlife habitat but will be open to the public for recreational activities such as fishing and hiking. Mississippi met the one-to-one match obligation principally with state bond funds generated by tidelands leases from casino operations.

Implementation of the Coastal Impact Assistance Program

The Coastal Impact Assistance Program (CIAP) was a single year appropriation of nearly $150 million in FY 2001 to help states and local communities mitigate the impacts of Outer

Continental Shelf oil and gas development and production. Alabama, Alaska, California, Florida, Louisiana, Mississippi, Texas, and 147 localities within those states received funds.

States and counties completed the first year of CIAP implementation in March 2003, and most projects are still underway. Most projects align with CZMA goals, so eligible states and counties were able to use CIAP funding to augment CZMA grants. Accomplishments include:

- In Alabama, CIAP funds were used to acquire nearly 1,000 acres in the Mobile-Tensaw Delta. An aquatic inventory and research on native species on the acquired lands will improve habitat conservation. Creation of a Mobile-Tensaw canoe trail and public access enhancements at Chickasabogue Park and Dead Lake Marina will increase public access.
- In Mississippi and Texas, more than 14,000 acres were acquired for conservation and recreation. These acquisitions include some 2,500 acres of wetlands. Most of these areas will remain pristine, though some will provide public access.
- In Florida, the Clay County Manatee Protection Plan and the Indian River County Sea Turtle Habitat Conservation Plan will help protect endangered species. Reef habitat mapping in Broward County and vegetative dune stabilization in Brevard County will contribute to habitat conservation.
- In California and Alaska, CIAP has funded regional resource inventories and habitat survey reports.

Implementation of the Great Lakes Coastal Restoration Grant Program
The Great Lakes Coastal Restoration program (P.L. 106-553) provided $30 million in grants in FY 2001 to Great Lakes states and their local partners for community based habitat restoration and acquisition projects. The Great Lakes region was able to leverage the $30 million in federal funding with an additional $42 million in state and local match.

Implementation of the one-year program began in FY 2002. The Great Lakes states — Illinois, Indiana, Michigan, Minnesota, New York, Ohio, Pennsylvania, and Wisconsin — are currently in the process of implementing selected restoration projects. Funded projects include wetland and dune habitat restoration, invasive species removal, brownfields cleanup, storm water management, and acquisition of over 2,700 acres of critical coastal habitat. More than 70 local government units are partnering in this restoration program.

The Lion's Den Gorge Natural Area acquisition project in Ozaukee County, Wisconsin, provides one example of a highly successful preservation partnership funded by the Great Lakes Coastal Restoration program. The Ozaukee County Land and Water Conservation District worked with the Wisconsin Coastal Management Program, as well as a number of local and state entities, to purchase this pristine 79-acre coastal property located in one of the fastest developing regions within the state. The parcel contains a diverse mixture of grassland, wet meadows, woods, wetlands, and bluff areas, which provide habitat for migratory birds, game birds and waterfowl, amphibians, and mammals. Nearly a mile of Lake Michigan bluff and shoreline was preserved through this acquisition, which will be established as an Ozaukee County Park. After acquiring

the Lion's Den Gorge property, Ozaukee County has continued to work with the Wisconsin Coastal Management Program to improve public access and educational opportunities in this unique coastal area.

Habitat Conservation at the National Estuarine Research Reserve System
The National Estuarine Research Reserve System provides long-term protection of natural resources within the system's 26 reserves and is a model for responsible management practices. Stewardship involves research, monitoring, education, policy, and resource management. Since reserve resources are often affected by external activities, stewardship coordinators team with other reserve staff and cooperate with stakeholders outside the reserve. The system-wide program provides leadership, coordination, technical support, and consistency for activities at national, regional, and local levels.

During FY 2002 and 2003, over $12.4 million in base procurement, acquisition, and construction funding was awarded to reserves for land acquisition and construction projects, ranging from renovation and expansion projects for education and interpretive facilities, dormitories for visiting scientists and teachers, research labs, enhancements for public access, and acquisition of key land parcels for research, education and stewardship activity. In FY 2002 and 2003, the reserve system acquired more than 13,500 acres.

Stewardship activities include: land acquisition, habitat mapping, ecological restoration, resource inventories, biological monitoring, watershed management projects, endangered species protection, prescribed fire management, recreation management, regional planning, and policy development.

Key accomplishments include:
- In 2003, the Narragansett Bay Reserve, in Rhode Island, restored five acres of salt marsh in cooperation with federal and private partners. Two collapsed culverts were replaced to restore normal tidal flow. Shore birds and fish are now using the marsh.
- The Grand Bay Reserve, in Mississippi, in cooperation with the Mississippi Sandhill Crane National Wildlife Refuge, developed a prescribed burn plan to restore longleaf pine savanna habitat.
- The Elkhorn Slough Reserve, in California, continued to monitor and control invasive species using an integrated approach of applied research and public education.
- The Chesapeake Bay Reserve, in Maryland, successfully conducted multiple volunteer-based plantings to restore submerged aquatic vegetation as part of an ongoing partnership with the Chesapeake Bay Foundation. Experimental plantings were conducted at two reserve components to establish native beds and promote education within the community.
- The Hudson River Reserve, in New York, partnered with the Hudson River Estuary Program to map the entire benthos of the estuary. The results have been identification of sediment characteristics, erosion and deposition zones, and benthic features that could represent important habitat and historic ship wrecks dating to the Revolutionary War.

Marine Managed Areas Inventory

A Marine Managed Areas (MMA) inventory team was created to begin collecting data as a precursor to the MPA list called for in Executive Order 13158. The inventory team is comprised of NOAA and other federal and state staff. An advisory group, including nine representatives from states, commonwealths, and territories, has provided guidance to NOAA throughout the inventory process.

About 300 sites are currently included in the inventory, with additional data being collected from 20 states, commonwealths, and territories. Efforts are underway to collect data on tribal MMAs, in cooperation with tribal officials. Data from federal sites are nearly complete, with more than 300 sites currently included in the inventory. These federal sites include all 26 national estuarine research reserves and other NOAA and Department of the Interior program sites. When the inventory is complete, it is estimated there will be between 1,000 and 1,500 sites in the database. Resource managers will use this information to better manage these areas and determine the effectiveness of individual sites, as well as regional and national groupings. The inventory provides: an initial understanding of what, why, and where marine areas are managed in the United States; a standard database across programs, government agencies, and government levels; management and policy decision support; and a foundation for building both regional and national networks.

The MMA inventory and the MPA list are two separate actions. The inventory is being completed first. Data in the inventory will be used to assess whether or not specific sites meet the criteria to be placed on the list of MPAs. Sites that do not meet all of the criteria for placement on the MPA list will be maintained as part of the MMA inventory.

The criteria for developing the list of MPAs have not been determined yet. The Executive Order states that the list of MPAs, which will help in the development of a national system of MPAs, should be science-based and effective. The criteria for developing the List of MPAs will be determined through an open and public process

The Office of Ocean and Coastal Resource Management's Coral Activities
OCRM leads the coordination of NOAA's Coral Reef Conservation Grant Program and administers and manages grants awarded through the State and Territory Coral Reef Management Grant Program. OCRM is a key partner in local initiatives of the NOAA Coral Reef Conservation Program in American Samoa, Florida, Guam, Hawaii, the Commonwealth of the Northern Mariana Islands, Puerto Rico, and the U.S. Virgin Islands. OCRM has awarded approximately $4 million to the seven states and territories with tropical coral reef resources. The states and territories have used this funding locally for coral reef management, including the establishment of new marine protected areas, outreach and education materials, personnel, reducing nonpoint pollution impacts to coral reefs, and reducing anchor damage through the installation of mooring buoys.

Through the coral program, OCRM also works directly with the states and territories to identify, develop, and support priority technical assistance. This includes the U.S. Coral Reef Task Force initiative to develop local action strategies to address major threats to coral reef ecosystems, such

as land-based pollution, overfishing, and recreational overuse. OCRM assisted the jurisdictions in bringing stakeholders together to develop local action strategies to address these threats. Currently, OCRM is supporting NOAA Coral Program coordination with U.S. Coral Reef Task Force federal partners to address capacity and implementation needs within local agencies.

Other coral management technical assistance activities that support state and territory priority needs include:

- a two-year coral reef management assistantship program developed in partnership with NOAA's Coastal Services Center;
- workshops on vessel groundings, coral reef economic valuation, and marine protected area management plans development;
- the first economic valuation of coral and coastal reef resources in the island jurisdictions;
- the inventory, summary, and analysis of U.S. coral reef marine managed areas in conjunction with the national marine managed areas inventory; and
- pilot projects, in collaboration with the NOS International Programs Office, to test marine protected area management effectiveness indicators.

The Southern California Wetlands Recovery Project

The Southern California Wetlands Recovery Project is working to protect streams. Identifying and prioritizing the wetlands and watersheds to target for acquisition, restoration, or enhancement is an important part of this effort. The NOAA Coastal Services Center is assisting with remote sensing data to delineate watersheds and sub-watersheds, calculate stream sinuosity and entrenchment, and identify flood control structures. This data will be available on the Center's website in the summer of 2004.

Making Comprehensive Information Readily Available Improves Decisionmaking in Rhode Island

Coastal managers in Rhode Island developed a website that provides in-depth information about habitat restoration. The Rhode Island Habitat Restoration Portal includes habitat descriptions, maps, spatial data, permitting and funding information, and tools for evaluating and prioritizing current and proposed restoration projects. GIS tools use socioeconomic and ecological data to identify and prioritize restoration opportunities based on user-selected criteria. The tools focus on anadromous fish run habitats, seagrass habitats, and salt marshes.

Partners for this project include the Rhode Island Coastal Resources Management Council, the Narragansett Bay Estuary Program, Save The Bay, and NOAA's Coastal Services Center.

Coastal Water Quality

Coastal states and territories have continued to improve their programs to protect and restore coastal waters from the harmful effects of polluted runoff. Many state and territory efforts related to coastal nonpoint source pollution are the result of their continued work to meet the requirements of Section 6217 of the Coastal Zone Act Reauthorization Amendments of 1990. Section 6217 requires states to develop and implement "coastal nonpoint pollution control

programs." Under the Coastal Nonpoint Program states use a consistent set of management measures or "best management practices" to solve runoff pollution problems. State and territorial programs incorporate these management measures into a comprehensive plan to address land-based sources of runoff from agriculture, forest harvesting, urban construction and development, marina activities, and modifications of natural drainage patterns. States and territories provide accountability for their efforts through a number of tools, including regulations, voluntary approaches backed by enforceable policies, and outreach and education. State and territory coastal nonpoint programs are focused on pollution prevention—limiting and controlling runoff pollution before problems occur.

Coastal Nonpoint Program Approvals (2002-2003)

Coastal Nonpoint Program Full Approvals

US Virgin Islands	February 2002
Delaware	February 2002
Wisconsin	January 2003
American Samoa	May 2003
Maine	May 2003
North Carolina	May 2003
Commonwealth of the Northern Mariana Islands	June 2003
Connecticut	September 2003

Coastal Nonpoint Program Conditional Approvals

Ohio	June 2002
Georgia	June 2002
Minnesota	March 2003
Texas	March 2003

All states and territories participating in CZMA have successfully developed frameworks for solving their unique coastal runoff pollution problems, as required by Section 6217. Indiana, a recent entrant to the coastal zone management program, is in the process of developing its coastal nonpoint program.

Following initial review of nonpoint programs, NOAA and EPA issued conditional approval of all plans, and identified areas where work remained to meet program requirements. Sixteen states and territories have now achieved full approval, eight occurring in the past two years. Full approval means a state or territory has developed a program and is equipped to implement the full range of available solutions to coastal nonpoint pollution problems. Four states — Texas, Georgia, Ohio, and Minnesota — joined the National Coastal Zone Management Program after the July 1995 coastal nonpoint program submittal deadline and received conditional approval of their coastal nonpoint programs in the last two years.

Highlights of State and Territory Success

- Maryland continues to strengthen its Coastal Nonpoint Program through targeted implementation. For example, the state has been targeting funds to address on site sewage disposal systems. Funds are supporting: training workshops for state and local government staff, septic system inventories, database development; and management strategies to guide on site sewage disposals system siting, design, and maintenance.
- Wisconsin passed the nation's most comprehensive nonpoint source regulations to achieve full approval of its coastal nonpoint program. The rules outline performance standards for

various sources of polluted runoff ranging from agriculture to urban storm water; identify appropriate best management practices for runoff control; and enhance existing cost-share programs.

- The Commonwealth of the Northern Mariana Islands has amended its individual wastewater disposal and coastal resource management regulations to establish minimum standards for animal waste treatment, protect sensitive areas, preserve riparian buffers, reduce storm water runoff, and ensure that marinas will be sited and operated in an environmentally sound manner.
- Connecticut's Coastal Nonpoint Program is founded on strong partnerships between the many state agencies and outside organizations that help implement the program. For example, a committee of state agencies and industry representatives initiated a clean marinas program to acknowledge marina owners who implement environmentally sound marina management practices. Strong interagency collaboration also facilitated the development of a comprehensive manual on best management practices for site development.
- The U.S. Virgin Islands' legislature passed innovative rules on the use of alternative septic systems to deal with on site sewage disposal. The new regulations require the use of alternative systems, such as closed, gravel and soil-filled cells, and wetland plants to treat sewage where appropriate. The rules also require maintenance and routine inspections of all alternative systems to ensure they will function properly.

Federal Investments Leverage Coastal States' Dividends

Over the past two years, Congress has authorized $20 million for implementation of state coastal nonpoint pollution control programs. These resources have enabled for the coastal management programs to apply their unique capabilities to control coastal nonpoint pollution by supporting important administrative and project-oriented needs.

NOAA has encouraged states to target implementation funds toward three priority areas: septic systems, clean marinas, and capacity building. These areas have a coastal focus and are often not addressed directly through other federally funded nonpoint source programs. By targeting a portion of coastal nonpoint funds to these priority areas, OCRM and its state and territory partners are filling gaps left by other programs. Examples of how coastal states and territories are investing in these priority areas include:

1. *Clean/Green Marinas*—supporting programs that improve marina and recreational boating facilities management through practices such as environmentally sound vessel maintenance, spill prevention, and proper sewage disposal. Clean Marina programs are one of the most visible ways to educate citizens about nonpoint source pollution and their individual impacts on coastal ecosystems.

2. *Improved Management of Septic Systems*—working with state and territory health agencies and local governments to ensure proper design, installation, and maintenance of septic systems to better protect water quality, public health, and coastal shellfisheries.

3. *Strengthening State/Territory and Local Capabilities*—improving the available tools and decisionmaking capabilities of states, territories and local institutions to plan for and manage expanding growth and development in the coastal zone. For example, states are encouraged to invest in Nonpoint Education for Municipal Officials programs to help local decisionmakers better understand the relationship between land use decisions and water quality impacts.

Challenges for the Future

The problem of nonpoint source pollution is bigger than any single agency or program can solve. It requires the full spectrum of federal, state, territorial, and local agency programs and a commitment from citizens. Coordinating this myriad of activities and people remains difficult. Several states and territories face significant hurdles in completing the development of coastal nonpoint programs. The largest challenges remain obtaining financial, technical, and political support within state or territorial governments. Many states traditionally have had strong support from state government but now face financial and personnel cuts because of state budget shortfalls. Coastal water quality problems are caused by a complex mix of factors, making it difficult to identify measurable results from management actions.

Improved Policies and Technical Assistance Enhance Partner Programs

To improve technical assistance, NOAA sponsored two national coastal nonpoint program workshops and launched a clean marina website during 2002-2003. In April 2002, NOAA hosted a workshop focusing on Coastal Nonpoint Program development which brought together state coastal nonpoint program coordinators and federal counterparts from NOAA and EPA to discuss common concerns and stumbling blocks regarding developing fully approved programs. NOAA sponsored another workshop in Spring 2003 focusing on program implementation. During the workshop, state program coordinators had the opportunity to define program implementation and shape how coastal nonpoint programs would be evaluated.

NOAA developed a Clean Marina Initiative website [9] that offers technical assistance to state coastal managers and marina operators and owners who are interested in developing Clean Marina Programs and reducing polluted runoff from marina activities. The site includes a Clean Marina Program description; links to clean marina guidebooks, brochures, and newsletters; funding sources; state Clean Marina Programs; and other organizations promoting clean marinas. NOAA recognizes the Clean Marina Program can serve a valuable role in protecting coastal waters from nonpoint source pollution and has promoted the program as a way for states to meet many of the marina management requirements under the Coastal Nonpoint Program. As a result, the coastal nonpoint program has been responsible for driving the development of most Clean Marina Programs existing today and developing a national interest in the initiative.

Other Water Quality Efforts: Chesapeake Bay (Virginia) Reserve Measures Water Quality

Partnering with EPA's Chesapeake Bay Program Office, the Chesapeake Bay (Virginia) National Estuarine Research Reserve added five new continuous monitoring stations to the York River system. The stations began operating in May 2003 and will continue for at least three years. The

data collected will be used to measure attainment of water quality standards for dissolved oxygen, chlorophyll, and turbidity. The goal is to ultimately provide seamless access to data in real-time as part of a comprehensive Chesapeake Bay Observing System.

The Chesapeake Bay (Virginia) Reserve also initiated a series of monthly surface mapping cruises for the entire tidal York River in May 2003. This technology provides high speed high frequency mapping of water quality conditions as well as depth and location. Monthly data layers provided by this mapping system have been overlaid with other data to determine which areas achieve certain levels of water clarity. This evaluation is critical to delineate submerged aquatic vegetation habitat limits.

Other Water Quality Efforts: Florida Monitoring Red Tides with Ocean Color Data
At certain times of the year, rapidly increasing chlorophyll levels indicate the presence of red tide algae. These areas can be found using remotely sensed images that depict ocean color, which allows for faster, more targeted sampling in large bodies of water, helping coastal managers know when the blooms exist and where and how they might move. This information, provided by NOAA, allows Florida to reduce unnecessary closings of shellfish beds while protecting public safety and monitoring water quality.

Public Access

Population growth within the coastal zone has increased demand for places to swim, fish, and boat. At the same time, there is less land available as the shoreline is developed or set aside to protect sensitive habitats.

The scarcity of open shoreline has sharply driven up coastal real estate prices, not only in historically developed areas such as the northeast and mid-Atlantic, but also in newer-developing areas in the southeast and Gulf states. This has made land acquisition more difficult.

Some states and territories have turned to special bonds and trust funds, but others are increasingly relying on partnerships with other agencies, local governments, and nonprofit organizations such as land trusts. User conflicts involving shoreline areas and nearshore waters remain a challenge as well.

Section 306A of the CZMA, the Coastal Resource Improvement Program, is an important mechanism for many states and territories to provide support for local projects. Funding is used for land acquisition and small scale construction projects. Most states and territories use money from this voluntary program to support projects that promote access to beaches and waterfronts, such as boardwalks, dune walkovers, and fishing piers. On average, between six and seven percent of the base federal CZM funding is allocated each year to these projects. In 2002—2003 approximately $7.5 million in federal money, equally matched by state and local governments, was spent under Section 306A, funding 163 projects in 17 states. Nineteen projects created entirely new access sites, while the remainder enhanced existing sites.

National Estuarine Research Reserves also have a public access role. Every reserve management plan must address public access. This is critical in reserve sites, which both protect resources

and educate visitors. This may be accomplished through building a boardwalk with interpretive signs through a marsh area, preventing sensitive resources from being trampled, while allowing visitors to see and learn about the environment.

Several reserves conducted public access projects during the last biennium.

- The Grand Bay Reserve, Mississippi, developed plans to improve and expand the parking area at one its two public boat ramps.
- The Great Bay Reserve, New Hampshire, funded a study of visitors' impact on bald eagle use of a winter roost. This study will provide objective information to evaluate local management conflicts.
- The North Carolina Reserve developed trails in Currituck Banks and monitored the impacts of horse tours.
- The Rookery Bay Reserve, Florida, finished design plans and submitted permits for public access at Tarpon Bay, which will include parking, a boat launch, and a 2.5-mile boardwalk.

Coastal Hazards

Our nation's coasts are among the most desirable places to live. Unfortunately, they also are among the most hazardous. Each year, coastal hazards, such as hurricanes and flooding, take their toll on life and property on the nation's coasts. Erosion and sea-level rise, more subtle processes, also impact our resources and infrastructure. Preparing for and responding to the impacts of coastal hazards is a cornerstone of the CZMA.

The likelihood of dramatic loss of life and property grows daily along with our coastal population. Our knowledge of how to deal with these threats grows, too. Frequently, the best solution over the long term is also the least expensive. Losses in property and life can be avoided by protecting coastal resources such as wetlands, barrier islands, beaches, and dunes through effective laws, enforceable policies, and non-regulatory approaches.

These natural resources can provide vital buffers against numerous natural disasters. Healthy wetlands are perhaps the biggest insurance policy states and territories have against the ravages of severe flooding and storm induced wave damage. Dune protection, restoration, and creation programs, as well as the establishment of buffers and setbacks for new construction, help minimize damage and offset skyrocketing repair costs from coastal storms. Buffers along banks and stringent building guidelines in flood-prone areas are a direct result of the policies and goals established by the CZMA. To achieve these goals, coastal states need better data (including ocean and coastal observations), information, and decision support tools. Several efforts to meet this need were underway in the last biennium.

The Coastal Storms Initiative

The Coastal Storms Initiative (CSI), a nationwide effort to reduce adverse impacts of storms on life and property, the economy, and environmental health in coastal areas, brings local, state, and federal organizations together to work on site-specific projects. CSI is led by the NOAA Coastal Services Center and the National Weather Service, in partnership with coastal management programs and other NOAA offices. CSI involves a phased implementation strategy to address

regional differences in impacts and development, as well as plans to extend the impact of the program nationally.

Two pilot projects began during 2002—2003. The first pilot began in FY 2002 in the St. Johns Water Management District in northeast Florida. This locally managed effort is a compilation of nine projects that address specific hazards-related issues. Together, the projects will result in a large suite of new and improved tools, data, information, forecast models, and training for coastal communities. The Florida projects will be completed in FY 2004.

The second pilot project is taking place in the Pacific Northwest (including portions of the Lower Columbia River, the northwest Oregon coast and the southwest Washington coast). The project began in late FY 2003 with initial scoping of projects and the establishment of a Sea Grant Extension agent to serve as the outreach and extension coordinator for the pilot area. The Florida, Oregon, and Washington coastal management programs are partners in these pilot projects.

State Coastal Management Programs Address the Impacts of Coastal Hazards

Many state coastal management programs are seeking new ways to improve decisionmaking to address the impacts of coastal hazards. The Oregon Coastal Atlas, for example, offers both traditional and digital information to improve and streamline decisionmaking related to the Oregon coastal zone.[10] The information, useful in making decisions on how to reduce impacts of coastal hazards on coastal communities and resources, includes links to tools developed by other states and federal agencies, such as the Coastal Hazards Information Management System developed by OCRM, in partnership with the Alabama and Georgia coastal management programs. The website includes a mapping tool, and plans are underway to enhance it with an interactive landslide mapping capability. The Oregon Coastal Management Program and the NOAA Coastal Services Center are also working together to develop a coastal erosion forecast tool for the Atlas that uses real-time observations.

The Wisconsin Coastal Management Program is also seeking to improve coastal hazard decisionmaking with a multi-year strategy to develop a comprehensive coastal hazards policy. Elements include:

- Updating and integrating information and methods in a GIS compatible format.
- Developing a comprehensive education program on erosion rates and flood-prone areas for government officials, the private sector, and the public.
- Developing an institutional framework to improve regulatory mechanisms and local mitigation efforts.

Visualizing Flood Forecasts

Flooding is the most deadly consequence of a hurricane. North Carolina is working with the U.S. Geological Survey and NOAA's Coastal Services Center to not only improve flood forecasting but also increase the use of the information by making it more visual. Implemented

in North Carolina during Hurricane Isabel, the effort uses GIS to illustrate the forecast, which makes the information easier for citizens to understand.

Coastal Community Development

Coastal counties are the most densely populated areas in the United States. In 1997, the average density in coastal counties was 277 residents per square mile, compared with a national average of 91 residents per square mile.[11]

More people living on some of our nation's most environmentally sensitive and ecologically productive land means extra care must be taken so economic growth can be sustained over decades. State Coastal Zone Management programs promote activities in coastal communities to accommodate growth and development while ensuring coastal resources are viable for future generations.

Without long-term plans, growth and development can harm the resources needed to sustain a healthy economy and environment. For example, malfunctioning septic systems servicing shoreline development can contaminate bays and cause fisheries and beaches to close; paving over too much land reduces the ability of water to filtrate and replenish underground water sources, thus straining fresh drinking water supplies; and coastal storms, erosion, and mudslides can destroy homes and hotels located too close to the shoreline.

State coastal management programs promote sustainable growth in coastal communities by:

- working with local governments to balance economic development and environmental protection and reduce sprawl and unplanned growth at the urban fringe;
- working with local governments to develop land use plans, ordinances and permitting programs to guide the location and impacts of new development;
- developing special area management plans to increase protection of significant natural resources while allowing reasonable economic growth.
- promoting voluntary stewardship of private lands through training programs and funding for restoration projects;

NOAA and its coastal management partners provide local decisionmakers with information on development impacts on coastal resources and alternatives to traditional suburban development. This information helps foster local solutions to managing coastal development. In addition, state and territory coastal management programs have partnered with the reserves to implement coastal decisionmaker workshops to educate and incorporate resource protection into the local development process. Efforts involving government, industry, and citizens can promote sustainable growth in coastal communities by ensuring the integrity of the coastal environment is maintained during economic development. Examples include:

Michigan Coastal Management Program Creates Guidebook

Michigan's Coastal Management Program recently released a guidebook, *Filling the Gaps: Environmental Protection Options for Local Governments,* a hands-on resource to help local officials develop local land use plans, adopt new environmentally focused regulations, or review proposed development. Michigan is a home rule state, with over 1,800 local government units authorized to make land use decisions. However, not all local officials are aware of their options for implementing strong land use management tools, or of opportunities to partner with state and federal governments and local conservation organizations to protect important natural resources within the community.

This guidebook provides model ordinances that local governments can use as a guide to draft their own planning and zoning tools. The Michigan Coastal Management Program will be conducting seminars to introduce the planning tools in the guidebook to local officials throughout the state.

The Coastal Training Program: Padilla Bay National Estuarine Research Reserve and Washington Department of Ecology
The Coastal Training Program, an important educational tool of the national estuarine research reserves, follows a systemwide protocol of market analysis, needs assessment, program planning, and educational delivery to train the diverse coastal decisionmakers. The Padilla Bay Reserve, working with the Washington Department of Ecology, found these groups needed a better understanding of shoreline processes. Shoreline planners, including city, county, tribe, and state agency workers in western Washington, recently attended a workshop to gain working knowledge of the physical processes shaping marine shorelines and how shorelines are affected by development.

Docks and Piers: Inventory of Laws, Regulations, and Policies for the Southeast
Coastal issues that often make the headlines are usually homes threatened by erosion or a developer illegally filling in marshlands, but for many state regulatory programs, residential docks and piers take up much of their time. When is a dock too long? What about crossing property lines? At what point does a creek have too many docks?

Coastal states look to NOAA and each other for help with these issues. The NOAA Coastal Services Center developed a quick reference document on residential dock and pier policies of several coastal states, and NOAA's National Centers for Coastal Ocean Science partnered with OCRM to hold several workshops and produce a database about the environmental and aesthetic impacts of these structures.

States use this information to develop new policies that respect the rights of private property owners and address environmental and aesthetic concerns.

Competing Demands for Coastal Resources – Reaching a Consensus
Strong opinions often surface when resolving coastal issues. Negotiating between competing demands from property owners, environmentalists, developers, and others is one of the most difficult tasks faced by state programs.

The NOAA Coastal Services Center's "Public Issues and Conflict Management" training course was developed for this reason. Participants learn techniques to avoid or defuse conflict in potentially contentious public meetings.

This is just one of many courses designed for state programs. In addition to management skills, courses that increase technical skills are also available from the Coastal Services Center. Over 1,000 employees of local, state, and federal coastal management programs take these courses each year.[12]

Protecting Water Dependent Uses and Revitalizing Urban Waterfronts

Waterfront revitalization, port development, and protection of water dependent uses are complementary CZMA goals which promote economic development while balancing competing uses of the coast. Waterfronts traditionally were the center of commercial, industrial, and recreational activities in coastal communities, but economic and technological changes have left many waterfronts underutilized and in disrepair. Because of their industrial history, many urban waterfronts and port properties are brownfields — real estate where expansion or redevelopment is complicated by real or perceived contamination.

OCRM and state and territory coastal management programs have worked with communities to develop and implement master plans to revitalize waterfronts, clean up brownfields, provide public access, and restore coastal resources. Many coastal management programs have worked with communities to develop harbor management plans to balance competing uses and preserve water dependent uses such as maritime trade. As U.S. ports modernize marine transportation systems, balancing port expansion while maintaining community character and protecting resources is a challenge for coastal managers.

In 2003, NOAA launched the Portfields Initiative to help port communities revitalize their harbors and improve the nation's marine transportation system while restoring and protecting coastal resources. With increasing maritime trade, U.S. shipping ports will be faced with the need to increase capacity and infrastructure. As available land is often limited in port areas, brownfields redevelopment presents an important strategy for port expansion efforts.

OCRM and NOAA's Office of Response and Restoration have been working together to coordinate activities related to the cleanup and redevelopment of waterfront brownfields, or portfields.

Portfield Pilots: New Bedford, Massachusetts; Tampa, Florida; and Bellingham, Washington
Originating out of the Brownfields Federal Partnership Action Agenda, the Portfields Initiative brings together NOAA, the Environmental Protection Agency, the Maritime Administration, Economic Development Administration, U.S. Army Corps of Engineers, Department of Housing and Urban Development, and Department of the Interior. All agencies have committed to targeting brownfields cleanup and resource reuse in three pilot port communities.

In addition, the federal agencies partnered with the International City/County Management Association to develop a Portfields Report from information gathered through interviews with ports that successfully incorporated brownfields redevelopment into port activities. The report is designed to transfer successful practices and strategies to other ports.

Designated in October 2003, the first Portfields pilots are New Bedford, Massachusetts, Tampa, Florida, and Bellingham, Washington. Each port was chosen for its strong commitment to redevelopment and comprehensive approach to environmental, economic, and social goals. NOAA will be hosting kick-off meetings in each Portfield pilot, which will be an opportunity to engage federal, state (including coastal management programs), and local players in the Portfields Initiative. After local kick-off meetings, action plans for each of the pilots will be developed, and the International City/County Management Association will prepare a one-year report on progress under this initiative.

National Estuarine Research Reserve System

The National Estuarine Research Reserves System is a network of 26 protected areas representing different biogeographic regions of the United States protected for long-term research, water-quality monitoring, education, and coastal stewardship. NOAA provides funding, national guidance, and technical assistance. A lead state agency or university manages each reserve with input from local partners. The partnership between NOAA and coastal states protects more than one million acres of estuarine land and water, providing essential habitat for wildlife; offering educational opportunities for students, teachers, and the public; and serving as platform for research.

Reserve staff work with local communities and regional groups to address natural resource management issues, such as nonpoint source pollution, habitat restoration, and invasive species. Through integrated research and education, reserves help communities develop strategies to deal successfully with coastal resource issues. Reserves provide adult audiences training on estuarine issues, offer field classes for K-12 students, and support teachers through professional development programs in marine education. Reserves also provide long-term water quality monitoring as well as opportunities for scientists and graduate students to conduct research in a living laboratory.

Graduate Research Fellowship Program

The reserve system's Graduate Research Fellowship program funds graduate students on a competitive basis. The program provides master's degree and Ph.D. candidates with an opportunity to explore scientific questions of local, regional, and national significance, and the results are high-quality research focused on improving coastal management issues.

A fellow's research must be conducted in a National Estuarine Research Reserve. Each reserve can support up to two fellows in any funding year. Funds support research projects that will

enhance scientific understanding of reserve ecosystems, provide information needed by reserve management and coastal management decision makers, and improve public awareness and understanding of estuarine ecosystems.

The program attracts students from all over the country, including states that do not have a reserve. Since its inception in 1997, the program has funded a total of 159 fellows from 56 universities. The program is designed to provide funding awards for multiple years.
In FY 2002, the reserve system funded 31 fellows previously accepted in the program and 15 new fellows (46 out of 50 available positions were filled). In FY 2003, there were 22 returning and 25 new fellows (47 out of 50 available positions were filled).

Fellowship projects focus on habitat restoration/conservation, nutrient dynamics/non-point source pollution, sustaining estuarine resources, invasive species/biodiversity, and economic, sociological, and/or anthropological research applicable to estuarine ecosystem management.

Fellows are sharing their research at national conferences. At the Estuarine Research Federation Meeting in 2003, more than 50 past and current fellows presented their research. Many of the fellows have moved to faculty positions at major universities or to research positions at federal, state, and private institutions.

Four Research Fellows were awarded Walter B. Jones Memorial Awards for Excellence in Coastal and Marine Graduate Study in 2003. These congressional awards honor those who exemplify innovation, resourcefulness, leadership, and a commitment to balancing the human use of America's coastal and ocean resources with the needs of the resources themselves.

System-Wide Monitoring Program

A key to protecting coastal waters and restoring estuarine habitats is obtaining and understanding information on how human activities and natural events change ecosystems. The reserve system has begun a large-scale monitoring effort to track short-term variability and long-term changes in coastal ecosystems. The program provides valuable short- and long-term data to researchers, natural resource program managers, and other coastal decisionmakers.

The initial phase of the reserve system's program began in 1996. This phase focuses on monitoring a suite of water quality and atmospheric information. Since 1996, the program has collected pH, conductivity, temperature, dissolved oxygen, turbidity and water level data. In 2001, it began collecting monthly nutrient and chlorophyll-a samples. The program uses automated instruments to collect water quality data. These data loggers record at 30-minute intervals at four stations in each reserve. The reserve system’s monitoring program measures variables that indicate habitat quality for estuarine species, establish health criteria, and determine human uses. The information collected by this program has been used to measure the impacts of restoration projects and to analyze water quality conditions.

Data collected are centrally located, managed, and published at the Centralized Data Management Office in South Carolina. In December 2002, the reserve system completed its second synthesis of water quality data. The synthesis is available online.[13]

Coastal Training Program

The reserves' Coastal Training Program has provided up-to-date scientific information and skill-building opportunities to over 13,000 individuals who are responsible for making decisions that affect coastal resources. The program helps to ensure that coastal decisionmakers have the knowledge and tools to address crucial resource management issues.

Coastal Training Programs focus on coastal habitat conservation and restoration, biodiversity, water quality, and sustainable resource management. Programs target a range of audiences, including land-use planners, elected officials, regulators, land developers, community groups, environmental nonprofits, and coastal businesses. These training programs provide opportunities for professionals to network and develop new collaborative relationships to solve complex environmental problems.

The Coastal Training Program is a strategic approach to education. For a reserve's Coastal Training Program to become fully operational, it must conduct a series of needs assessments and marketing analysis to target the community's needs, the audiences, and the appropriate approaches. In the biennium, 11 reserves completed the required strategic planning process to fully implement its Coastal Training Programs.

Partnerships to Enhance Coastal and Ocean Management

OCRM works in partnership with the states and territories, other federal agencies, and nongovernmental organizations to ensure the conservation and responsible use of the nation's coastal and ocean resources. In the past two years, OCRM was involved in a number of partnerships to address ocean and coastal issues.

Working Across National Boundaries: Tijuana River National Estuarine Research Reserve

The Tijuana River Watershed Project has been a nine-year, three-phased collaboration between federal, state, and local governments; nonprofits; and academic institutions from both the United States and Mexico with jurisdiction in the Tijuana River watershed. The project was initiated with NOAA investment in 1994 that leveraged further support from the U.S. Navy and other nonprofit and state funding sources. NOAA's goals for the project were to support education, research, and stewardship programs at the Tijuana River National Estuarine Research Reserve. Three-quarters of the Tijuana River Watershed lies within Mexico and drains into the estuary, and at the beginning of the project, the reserve had no maps of its watershed. It was therefore

difficult to engage partners on both sides of the border in watershed stewardship and education projects. The reserve's restoration program also suffered from a lack of accurate rain and stream flow data from the Tijuana River, which hampered assessments needed to plan restoration efforts.

The project goal was to engage partners on both sides of the border to integrate existing technical capacities, data, and human and financial resources and authorities to address common issues in the shared watershed. The first phase of the project developed the first GIS map of the watershed.

In the second phase of the project, stakeholders in the watershed identified high priority issues GIS can address. Based on their input, the demonstration project focused on developing a flood risk assessment using simulated GIS data, since no real data existed.

In the third phase of the project, a technical team designed and implemented the first binational integrated real-time flood warning system in the watershed. The effort drew in a wide range of public and private partners. The National Weather Service donated equipment; private sector companies donated software; and academic institutions in both San Diego and Tijuana provide access to data.

The system is now in place and transmitting real-time precipitation and flow data to emergency responders and flood warning personnel in the United States and Mexico, increasing warning time for flash floods to risk-prone areas.

Working Across National Boundaries: The International Brant Goose Monitoring Project

Padilla Bay National Estuarine Research Reserve provided international coordination for a tri-national partnership between schools and resource agencies along the Pacific Flyway. Observations continued in 2002-2003 as students and citizens from Alaska, British Columbia, Washington, Oregon, California, and Baja California, Mexico learned about Brant geese through classroom activities, field trips with local experts, and by using the internet and a special website to communicate their findings.

Working Across National Boundaries: The Gulf of Maine Program

The Gulf of Maine Council on the Marine Environment is a government-to-government body with representatives from Maine, Massachusetts, New Hampshire, New Brunswick, and Nova Scotia, as well as federal agency representatives from the United States and Canada. The Council works together on regional issues affecting the health of the Gulf of Maine ecosystem. Under the Gulf of Maine Regional Partnership Initiative, NOAA has been working to advance four priority goals and promote better distribution of NOAA products and services. NOAA provided funding and staff time to support these action items, including:

Regional Habitat Restoration Planning and Implementation: The first draft of the Gulf of Maine Habitat Restoration Plan creates a framework for habitat restoration activities in the Gulf of Maine and focuses on habitat protection and migratory and marine species. A website will provide a wide range of data and information about restoration of regionally significant habitats in the Gulf of Maine. Federal and state agencies, nonprofit groups, and the public will be able to use this site to apply for grants, select potential projects, educate the public, and assist the state in restoration planning. One project goal is to identify major differences in Canadian and U.S. approaches to restoration and make recommendations on how to more completely engage the Canadian restoration community. Habitat planning continued in FY 2003 to support a Habitat Coordinator, and work began in FY 2003 on an internet-based restoration information and tracking system.

Seafloor Habitat Mapping: Seafloor habitat mapping will identify essential fish habitat, help prepare maps for aquaculture operations, and predict storm surges from hurricanes. NOS funded a workshop to develop a regional strategy to map the Gulf of Maine and a project to host five needs assessment workshops in 2003-2004 to support the Gulf of Maine Mapping Initiative — a joint U.S./Canadian effort to map the entire Gulf of Maine basin.

Marine Protected Areas/Marine Habitat Conservation Framework: OCRM's Marine Protected Areas Center and the Gulf of Maine Council on the Marine Environment sponsored an Ocean Zoning forum in December, 2002 in Boston. The Marine Protected Areas Center located a staff person in the Massachusetts Office of Ocean and Coastal Resource Management to coordinate marine protected areas information and activity in the northeast.

Land Based Sources of Pollution in the Gulf of Maine: NOAA will sponsor the "Gulf of Maine Summit"– a three-day conference to be held in October 2004–to develop a vision and plans for improving the environmental quality of the Gulf and produce information and indicators needed to finalize a "State of the Gulf of Maine Report." The Summit is the culmination of a "bottom up" process that will build on information collected by local watershed forums that have been held around the Gulf of Maine.

The Gulf of Maine Program will also be used as a pilot in the NOAA National Eutrophication Assessment Update. This pilot, begun in 2003 and continuing in 2004, will help determine the region's susceptibility to nutrient over-enrichment and will help develop a nutrient over-enrichment early warning system to assist coastal managers.

The Coastal States Coordination Committee

In 2002 and 2003, NOAA and the Coastal States Organization have continued to strengthen communication and cooperation between state and federal coastal management programs. A coastal coordination committee provides a forum for senior managers of state and federal programs to discuss opportunities to coordinate on issues of mutual interest, such as program development, implementation, evaluation, and improvement. The group has primarily brought

together state and Federal representatives from the National Coastal Zone Management Program, National Estuarine Research Reserve System, National Sea Grant Program, and National Estuary Program, as well as others who are involved in supporting coastal management and conservation, such as NOAA's Coastal Services Center, National Centers for Coastal Ocean Science, and Fisheries Habitat Conservation Office. The group has also invited participation of other programs in Federal agencies to discuss and coordinate on performance indicators related to the coast.

The group has hosted joint sessions at the annual Ocean and Coastal Program Managers' Meetings in 2002 and 2003. It produced a fact sheet, "Working Together for America's Coasts." The committee will be working on the national performance measurement system.

Partnerships for Marine Protected Areas

The Marine Protected Areas Center, a partnership between the Department of Commerce and the Department of the Interior, has increased its outreach and regional presence in 2002-2003.

Education Workshops
In 2002, the National MPA Center held regional workshops for educators from federal agencies and nongovernmental organizations to foster networking, exchange ideas, and determine what support the MPA Center could provide to enhance field-based education on MPA issues. Workshops were held in Maryland, California, and Minnesota. Complete workshop reports, presentations, and materials are available on the MPA website.[14]

Other Outreach Activities
The MPA Center began publishing a monthly electronic newsletter, *MPA Connections*, which features MPA Center activities and resources. The regular series clarifies misconceptions about marine protected areas. The newsletter is distributed via e-mail to more than 2,000 subscribers and is archived on the MPA website.[15]

The MPA Center has developed a broad range of materials to inform audiences about issues surrounding marine protected areas. In addition, the Center has been active at numerous conferences and exhibits, including a sportfishing leadership conference, MPA workshops hosted by fishery management councils, education workshops, scientific symposiums, and other MPA-related events.

MPA Science Institute, Santa Cruz, California
The Center's Science Institute, co-located with the NOAA Fisheries Laboratory at the University of California at Santa Cruz, has published a National Marine Protected Areas Social Science Research Strategy. The Science Institute plans to hold a series of workshops to help develop regional MPA social science research strategies and will be working on completing a Natural Science Research Strategy in the coming year.

Because of the confusion that comes with definitions and purposes of marine protected areas, the MPA Center has developed a common and consistent set of terms to better describe and define the many types of MPAs. The system uses fundamental characteristics of MPA design and management, including primary conservation goal, level of protection, permanence of protection, constancy of protection, and scale of protection, and provides sub-types and examples of each.

The National MPA Center plans to establish several electronic regional information clearinghouses in the coming year to provide a single source for information on all ongoing federal and state MPA planning processes. The Science Institute partnered with COMPASS (Communication Partnership for Science and the Sea) to develop the first of these online clearinghouses.[16]

MPA Training and Technical Assistance Institute, Charleston, South Carolina
In 2002, the Center's Training and Technical Assistance Institute, part of NOAA's Coastal Services Center, published an MPA Needs Assessment, which includes recommendations for clarifying policy and legal issues and responsibilities, providing MPA-related science and technology, and implementing outreach to communities affected by or interested in MPAs. The Training and Technical Assistance Institute is currently conducting an MPA technology needs assessment.

The Training and Technical Assistance Institute has developed a workshop, Understanding MPAs, piloted in Long Beach, California in September 2003. The Institute plans to take the workshop to a number of aquariums designated as Coastal Ecosystem Learning Centers around the country, in partnership with Coastal America. The MPA Center will offer the workshop at other locations and in conjunction with marine management related events.

The Training and Technical Assistance Institute has initiated a project to investigate past MPA designation processes. The first phase of this project was a review of five recent MPA establishment processes, with specific process-related elements outlined for each of the case studies. The MPA Process Review report provides a factual foundation on the structure and events of recent MPA processes. The second phase of the project, a series of interviews with varied stakeholders, will get their subjective perceptions of what worked and what did not for each case study.

Research, Education, and Technical Assistance

NOAA's National Ocean Service provides research, education and technical assistance to coastal states.

The Cooperative Institute for Coastal and Estuarine Environmental Technology

The Cooperative Institute for Coastal and Estuarine Environmental Technology (CICEET), established as a joint partnership between NOAA and the University of New Hampshire in 1997, is located on the University of New Hampshire campus in Durham. The mission is to provide a

scientific basis for understanding and reversing the impacts of coastal and estuarine contamination and degradation by developing and applying innovative environmental technologies and methods.

It meets this mission by funding projects that address the needs of coastal and estuarine resource managers. During the past two years, CICEET funded 29 projects at 18 of the 26 national estuarine research reserves. CICEET projects are designed to:

- Understand and reverse the impacts of toxic contaminants on estuarine and coastal ecosystems;
- Promote innovative techniques for reducing microbial contaminants;
- Reduce nutrient enrichment and eutrophication;
- Address habitat loss and restoration; and
- Make it easier to access and use coastal and estuarine data.

CICEET's Storm Water Technology Evaluation and Verification Program
Storm water runoff from urban, residential, and agricultural areas has been identified as the major cause of water quality impairment in the United States.

Phase II of the Clean Water Act established a schedule for municipalities to meet storm water discharge control regulations by 2003. The regulations are clear. How municipalities will comply is anything but clear, since the market is full of storm water control products without credible third-party data on the performance of these systems.

In response to this lack of information, CICEET initiated a Technology Evaluation and Verification Program in 2002. The program focuses on engineered storm water treatment technologies and, in collaboration with industry and government, will design, develop, and operate a facility that can test storm water control designs. This will enable officials to see systems in operation before deciding whether to implement them and provide an opportunity to address one of the major causes of coastal pollution.

Nutrient Sensor Commercialized
Inputs of nutrients to estuaries have grown along with increased population growth and the intensive use of fertilizers in agriculture. Excessive nutrient inputs result in algal growth and reduced oxygen conditions. To understand the processes involved, managers need to sample nitrogen so frequently it would be cost-prohibitive to use traditional sampling and lab analysis.

In response, CICEET funded a project adapting existing oceanic sensing technology developed at the Monterey Bay Aquarium Research Institute. The Digiscanner was designed for deployments of up to three months, with sampling occurring automatically. Deployments at several reserves have demonstrated the utility of this new instrument. In fact, the technology was formally licensed by YSI, Inc., which plans to make the tool commercially available in the spring of 2004.

EstuaryLive and National Estuaries Day

National Estuaries Day is an interagency campaign to celebrate the importance of estuaries and highlight the need to protect them. Local communities throughout the country celebrate their estuaries with a variety of special events, most of them hosted by NOAA's national estuarine research reserves and EPA's national estuary programs.

In the past two years, EstuaryLive has been the featured event for National Estuaries Day. EstuaryLive is an interactive internet field trip of estuaries where participants can ask tour guides questions. Most questions are answered live during the broadcast.

In each of the past two years, one million viewers participated in EstuaryLive. Highlights from the 2002 field trips include: showing the use of radio telemetry equipment to track Eastern box turtles and sora rails from the Chesapeake Bay; sampling water quality in South Carolina; learning about the cultural and biological history of the Neuse River in North Carolina; following the life cycle of the Dungeness Crab and learning about their recreational and commercial importance in Oregon; discovering how robots are being used to study the coastal ocean in New Jersey; diving for fish in Washington; learning about the types and impacts of pollution in estuaries in Massachusetts; and exploring bogs with bug eating plants in Alabama. The 2003 Estuary Live featured eight estuaries from around the country -- Albemarle-Pamlico Sound, in North Carolina; South Slough, in Oregon; Charlotte Harbor, in Florida; Galveston Bay, in Texas; Great Bay, in New Jersey; Puget Sound, in Washington; North Inlet, in South Carolina; and Elmer's Island, in Louisiana.

The Coastal Management Fellowship Program

Established in 1996, the Coastal Services Center Coastal Management Fellowship Program serves a dual purpose. First, the program provides professional on-the-job education and training opportunities for postgraduate students in coastal resource management and policy. Second, it provides specific technical assistance to state and territory coastal resource management programs. Highly qualified, recently graduated masters, professional, and doctoral degree students are matched with hosts in state or territory coastal management programs around the country. States and territories with federally approved coastal management programs can submit a project proposal to the Coastal Services Center to compete for placement of one of the fellows. The fellows work for two years on state and territory-level coastal management issues pertaining to federal management policies and regulations. Ten new fellows began projects in nine states in 2002-2003.

The Coastal Services Center, the Coastal States Organization, OCRM, state and territory coastal management programs, the Sea Grant College Program, and the University of Southern Mississippi collaborate on the Coastal Management Fellowship Program.

Conclusion

As a result of the Coastal Zone Management Act—and programs created and developed by it—our nation's coastal communities can be assured of continued environmental quality and economic vitality. NOAA, in partnership with coastal states and territories, will continue to pursue the objectives of the Coastal Zone Management Act, ensuring our coastal areas flourish for future generations. OCRM is well positioned to build on the successes of 2002-2003 in its role as a partner with states and local communities in coastal resource stewardship**.**

Appendix A: Itemization of Allocation of Funds

STATE	315 NERRS Operations 2002	NERRS Construction Acquisition 2002	Total FY 02	315 NERRS Operations 2003	NERRS Construction Acquisition 2003	Total FY 02
Alabama	583,360	250,000	833,360	572,500	-	572,500
Alaska	570,860	-	570,860	625,000	60,000	685,000
American Samoa	-	-	-	-	-	-
California	1,168,523	978,000	2,146,523	1,175,000	380,000	1,555,000
Connecticut	-	-	-	-	-	-
Delaware	528,360	-	528,360	500,000	817,500	1,317,500
Florida	1,734,720	1800000	3,534,720	1,790,000	1,330,000	3,120,000
Georgia	583,360	-	583,360	590,000	1,490,000	2,080,000
Guam	-	-	-	-	-	-
Hawaii	-	-	-	-	-	-
Illinois	-	-	-	-	-	-
Indiana	-	-	-	-	-	-
Louisiana	-	-	-	-	-	-
Maine	583,360	711,500	1,294,860	590,000	-	590,000
Maryland	583,860	-	583,860	585,000	-	585,000
Massachusetts	616,360	768,000	1,384,360	590,000	1,490,200	2,080,200
Michigan	-	-	-	-	-	-
Minnesota	-	-	-	-	-	-
Mississippi	443,360	-	443,360	557,500	5,961,000	6,518,500
New Hampshire	498,311	6089200	6,587,511	575,000	5,961,000	6,536,000
New Jersey	583,360	1425000	2,008,360	590,000	85,000	675,000
New York	588,142	650,000	1,238,142	590,000	-	590,000
North Carolina	1,047,360	-	1,047,360	589,991	-	589,991
Northern Marianas	-	-	-	-	-	-
Ohio	523,192	-	523,192	500,000	-	500,000
Oregon	618,360	335,000	953,360	649,000	330,000	979,000
Pennsylvania	-	-	-	-	-	-
Puerto Rico	565,860	300,000	865,860	590,000	100,000	690,000
Rhode Island	641,360	490,000	1,131,360	572,500	468,000	1,040,500
South Carolina	1,441,706	13,684,500	15,126,206	1,470,550	4,470,700	5,941,250
Texas	25,000	-	25,000	50,000	-	50,000
Virgin Islands	-	-	-	-	-	-
Virginia	565,860	-	565,860	565,000	438,000	1,003,000
Washington	583,360	1000000	1,583,360	590,000	595,000	1,185,000
Wisconsin	-	-	-		-	-
Total	15,077,994	28481200	43,559,194	14,907,041	23,976,400	38883441

STATE	Federal Section 306 FY 2002	Federal Section 309 FY 2002	Federal Nonpoint Section 6217 FY 2002	Total Federal FY 2002
Alabama	1,597,000	105,000	97,000	**1,799,000**
Alaska	2,000,000	540,000	370,000	**2,910,000**
American Samoa	882,000	76,000	79,000	**1,037,000**
California	2,000,000	540,000	570,000	**3,110,000**
Connecticut	2,000,000	179,000	123,000	**2,302,000**
Delaware	1,501,000	101,000	395,000	**1,997,000**
Florida	2,000,000	540,000	370,000	**2,910,000**
Georgia	2,000,000	273,000	186,000	**2,459,000**
Guam	916,000	77,000	79,000	**1,072,000**
Hawaii	2,000,000	175,000	120,000	**2,295,000**
Illinois	0	0	0	**0**
Indiana	1,150,000	0	0	**1,150,000**
Louisiana	2,000,000	540,000	370,000	**2,910,000**
Maine	2,000,000	413,000	281,000	**2,694,000**
Maryland	2,000,000	526,000	559,000	**3,085,000**
Massachusetts	2,000,000	418,000	635,000	**3,053,000**
Michigan	2,000,000	540,000	370,000	**2,910,000**
Minnesota	1,035,000	82,000	82,000	**1,199,000**
Mississippi	1,266,000	92,000	89,000	**1,447,000**
New Hampshire	1,055,000	83,000	384,000	**1,522,000**
New Jersey	2,000,000	540,000	370,000	**2,910,000**
New York	2,000,000	540,000	370,000	**2,910,000**
North Carolina	2,000,000	396,000	270,000	**2,666,000**
Northern Mariana Islands	967,000	80,000	81,000	**1,128,000**
Ohio	2,000,000	182,000	125,000	**2,307,000**
Oregon	2,000,000	219,000	149,000	**2,368,000**
Pennsylvania	2,000,000	174,000	268,000	**2,442,000**
Puerto Rico	2,000,000	219,000	299,000	**2,518,000**
Rhode Island	1,638,000	107,000	248,000	**1,993,000**
South Carolina	2,000,000	352,000	241,000	**2,593,000**
Texas	2,000,000	540,000	370,000	**2,910,000**
U.S. Virgin Islands	956,000	79,000	230,000	**1,265,000**
Virginia	2,000,000	540,000	570,000	**3,110,000**
Washington	2,000,000	539,000	367,000	**2,906,000**
Wisconsin	2,000,000	193,000	133,000	**2,326,000**
TOTALS	**58,963,000**	**10,000,000**	**9,250,000**	**78,213,000**

STATE	Federal Section 306 FY 2003	Federal Section 309 FY 2003	Federal Nonpoint Section 6217 FY 2003	Total Federal FY 2003
Alabama	1,618,000	105,000	85,000	**1,808,000**
Alaska	2,040,000	540,000	295,000	**2,875,000**
American Samoa	902,000	76,000	234,000	**1,212,000**
California	2,040,000	540,000	570,000	**3,150,000**
Connecticut	2,025,000	179,000	113,000	**2,317,000**
Delaware	1,522,000	101,000	252,000	**1,875,000**
Florida	2,040,000	540,000	295,000	**2,875,000**
Georgia	2,026,000	273,000	173,000	**2,472,000**
Guam	936,000	77,000	66,000	**1,079,000**
Hawaii	2,025,000	175,000	111,000	**2,311,000**
Illinois	0	0	0	**0**
Indiana	1,171,000	0	0	**1,171,000**
Louisiana	2,040,000	540,000	295,000	**2,875,000**
Maine	2,035,000	413,000	262,000	**2,985,000**
Maryland	2,040,000	526,000	570,000	**3,136,000**
Massachusetts	2,036,000	418,000	540,000	**2,994,000**
Michigan	2,040,000	540,000	295,000	**2,875,000**
Minnesota	1,055,000	82,000	69,000	**1,206,000**
Mississippi	1,287,000	92,000	76,000	**1,455,000**
New Hampshire	1,076,000	83,000	239,000	**1,398,000**
New Jersey	2,040,000	540,000	295,000	**2,875,000**
New York	2,040,000	540,000	295,000	**2,875,000**
North Carolina	2,033,000	396,000	726,000	**2,955,000**
Northern Mariana Islands	987,000	80,000	237,000	**1,304,000**
Ohio	2,025,000	182,000	116,000	**2,323,000**
Oregon	2,025,000	219,000	138,000	**2,382,000**
Pennsylvania	2,025,000	174,000	280,000	**2,479,000**
Puerto Rico	2,025,000	219,000	308,000	**2,552,000**
Rhode Island	1,659,000	107,000	256,000	**2,022,000**
South Carolina	2,029,000	352,000	224,000	**2,605,000**
Texas	2,040,000	540,000	295,000	**2,875,000**
U.S. Virgin Islands	976,000	79,000	237,000	**1,292,000**
Virginia	2,040,000	540,000	570,000	**3,150,000**
Washington	2,040,000	539,000	295,000	**2,874,000**
Wisconsin	2,025,000	193,000	443,000	**2,511,000**
TOTALS	**59,963,000**	**10,000,000**	**9,255,000**	**79,143,000**

[1] NOAA/NOS, Special Projects Office (SPO). 1999. *50 Years of Populations Change Along the Nation's Coasts: 1960—2010.* Washington, D.C.

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[13]http://cdmo.baruch.sc.edu/

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